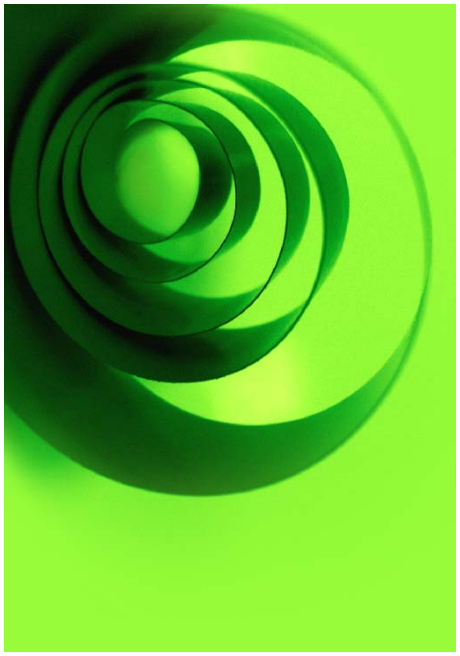

ABSTRACTS

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Hidden allergens in food

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Food allergies are considered a significant food-safety issue, whose prevalence has been increasing mainly in industrialized countries. The presence of non-declared allergens in food due to contamination during production or to misleading labeling represents a potential high risk for allergic individuals. To protect sensitized individuals, highly sensitive methods are required, especially for processed foods. To answer this need, we have developed specific DNA-based methods to detect soybean addition to meat products. The optimized species-specific PCR technique targeting the soybean lectin gene allowed the detection of 0.1% and 0.5% of soybean textured protein in raw and heat processed meat, corresponding to levels of protein detection of 0.01% and 0.06%, respectively. We have also proposed a novel approach by means of real-time quantitative PCR with fluorescent TaqMan probes for the detection of soybean in processed meat products in the range of 0.1% to 50%. The established PCR assays were successfully applied in the detection and quantification of soybean in processed meat products such as Frankfurters, hamburgers, poultry nuggets, containing pork or poultry as the main meat ingredient.

For the detection of tree nut allergens, new PCR assays were proposed for almond and walnut were based on the design of new primers targeting DNA coding for major allergens, on the use of real-time PCR with TaqMan probes and EvaGreen dye. The results allowed the detection of as low as 0.005% of almond and 0.05% of walnut residues in model foods and the effective application of the assays to processed foods.